



From Wood Chips to Pellets to Milled Pellets: the Mechanical Processing Pathway of Wood

Masche, M.; Puig Arnavat, M.; Holm, J. K. ; Jensen, P. A.; Ahrenfeldt, J.; Clausen, S.; Henriksen, U. B.

Publication date:
2018

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Masche, M., Puig Arnavat, M., Holm, J. K., Jensen, P. A., Ahrenfeldt, J., Clausen, S., & Henriksen, U. B. (2018). *From Wood Chips to Pellets to Milled Pellets: the Mechanical Processing Pathway of Wood*. Poster session presented at 2nd International Conference on Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability, Melia Sitges, Spain.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

From Wood Chips to Pellets to Milled Pellets: the Mechanical Processing Pathway of Wood

**M. Masche¹, M. Puig-Arnavat¹, J. K. Holm², P. A. Jensen¹, J. Ahrenfeldt¹,
S. Clausen¹, U. B. Henriksen¹**

¹ DTU Chemical Engineering, 2800 Kgs. Lyngby, Denmark

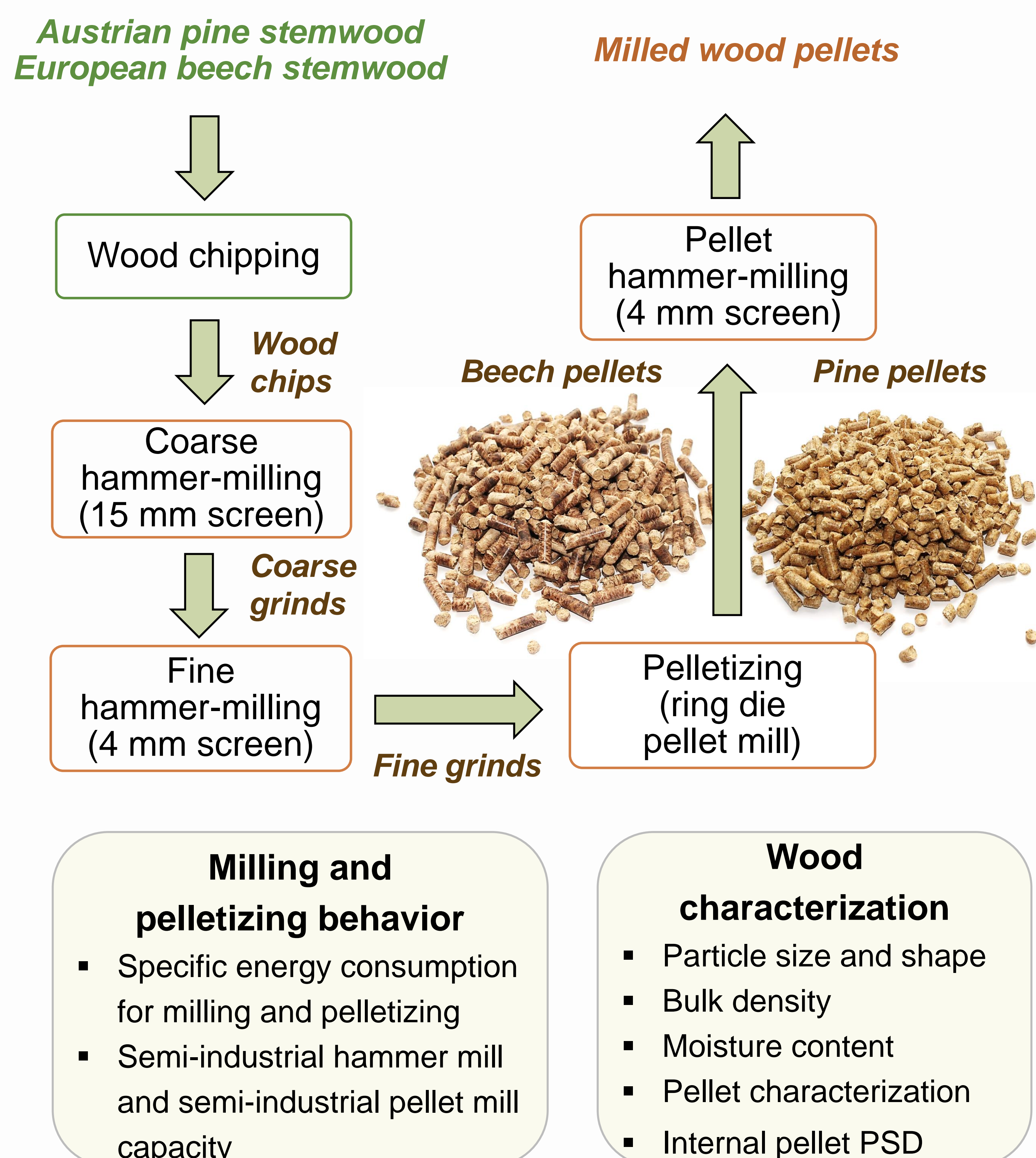
² Bioenergy and Thermal Power, Ørsted, Nesa Allé 1, 2820 Gentofte, Denmark

Motivation and research objectives

We present a study focusing on the mechanical processing pathway of wood, including pellet feedstock size reduction, pelletization, and pellet comminution, because:

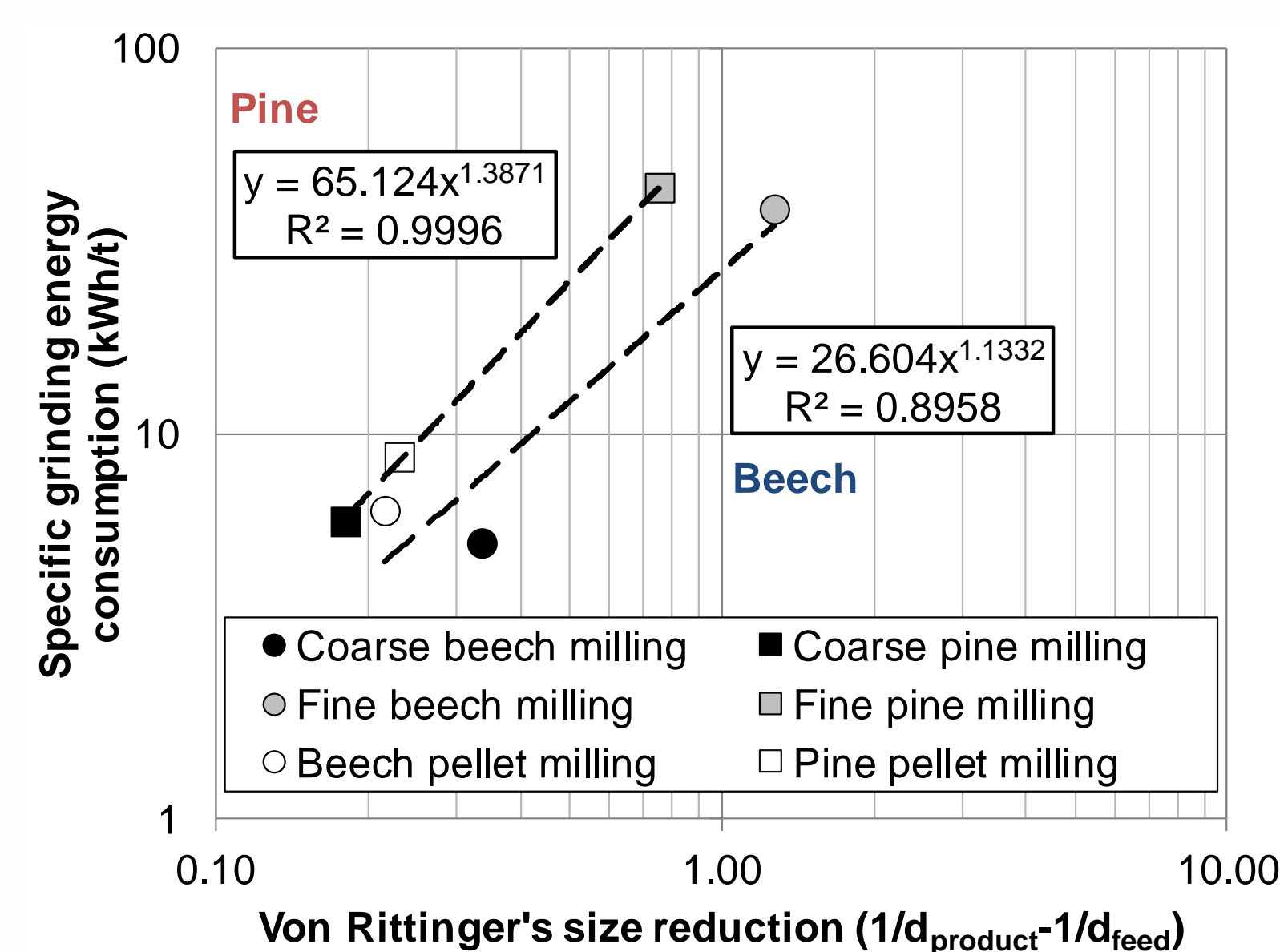
- Operators of wood suspension-fired power plants need information about the physical properties (i.e., size, shape, density) of milled pellet particles for optimizing particle burnout.
- An understanding of how pelletization and comminution alter the physical properties of wood is valuable for pellet producers, who want to produce pellets of desirable quality for power plants.
- Pellets after milling in coal mills are believed to show the original particle size distribution (PSD) before pelletizing.
- The effect of the size and shape of milled wood particles on the pelletizing process and pellet quality has hardly been studied.

How was the wood processing study performed?

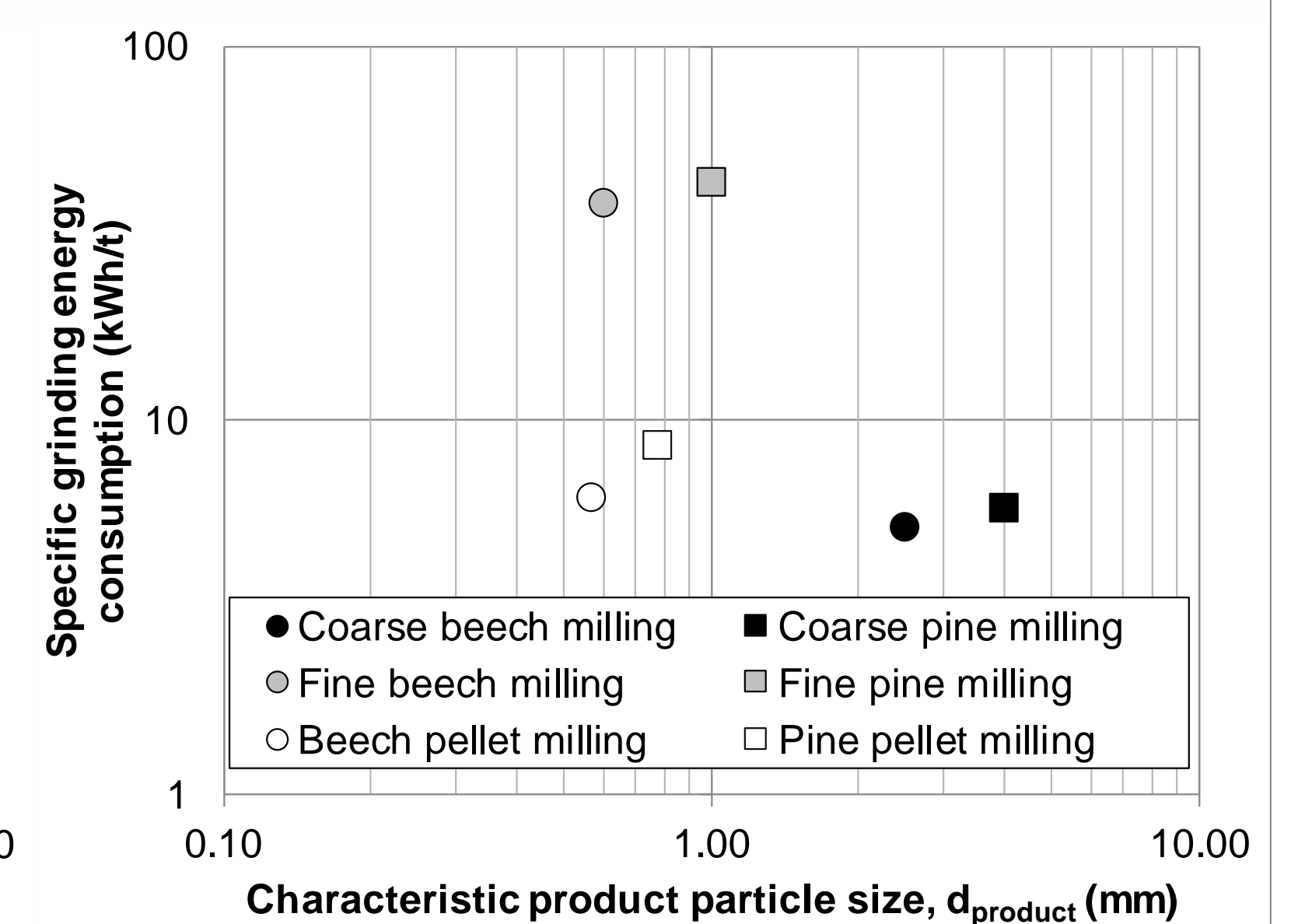


Main findings

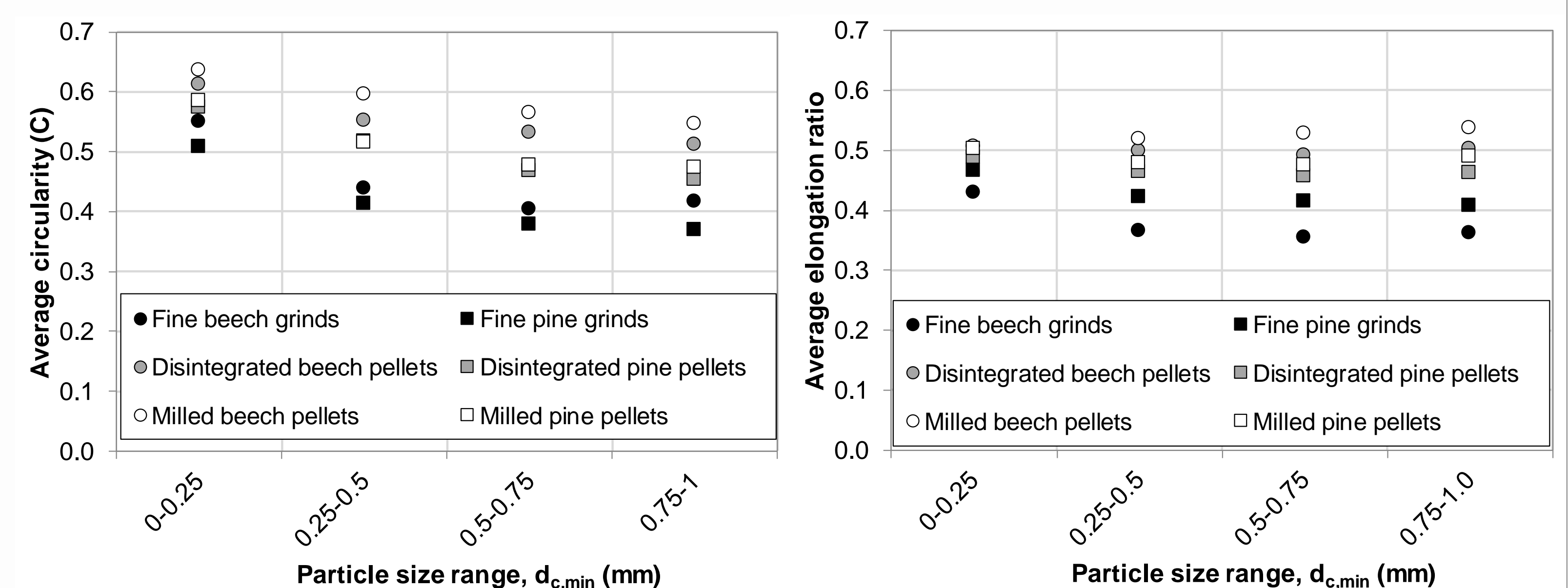
a) Size reduction effect



b) Particle fineness



c) Influence of pelletization and comminution operations on wood particle shape



Conclusions

- Milling beech requires less energy for milling, leads to higher size reduction, and produces finer particles.
- Milling pellets reduces the internal pellet particle size.
- Pelletizing beech requires more energy than pine due to lower amount of extractives.
- Pelletizing modifies the longest particle dimension and particle shape of wood.
- Pelletizing improves the grindability of wood compared to the pellet raw material.